October, 1955

THE CHEMIST

VOLUME XXXII NUMBER 10

Dr. A. R. Choppin

Accepts Honor Scroll of Louisiana Chapter from Dr. J. B. Entrikin

(*See Page* 359)

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Entered as second class matter April 8, 1936 at the Post Office at New York, N. Y., under Act of August 24, 1912. Issued monthly.
Subscription price, $2.00 a year to Members, $3.00 to Non-Members. Single copy, this issue, $0.25. Copyright, 1955 by THE AMERICAN INSTITUTE OF CHEMISTS, INC.

Volume XXXII | October, 1955 | Number 10

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Award of the Chicago Chapter Honor Scroll to Dr. Charles C. Price, F.A.I.C.

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TO COME IN NOVEMBER

The human interest story in November will be the presentation of the Honor Scroll of the Western AIC Chapter to Dr. Arnold O. Beckman. • The Committee on Employer-Employee Relations has recommended that a paper, entitled, "Engineering Ethics — from the Viewpoint of Industry," by Gerry E. Morse, be reprinted for the attention of readers who may wish to comment on it. • The golden month of harvest fulfillment is an appropriate time to consider food. We offer, "Algae as a Potential Future Source of Foods," by Dr. A. W. Fisher, Jr., with appropriate thanksgiving that to the variety of our present crops, if need be, chemists may add another.

TO SERVE YOU

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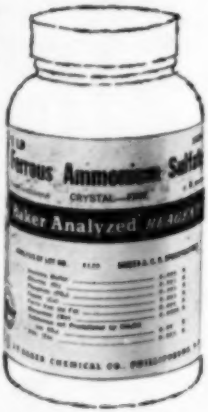

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EDITORIAL

An Ever Present Help —the AIC Committees

THE AMERICAN INSTITUTE OF CHEMISTS appoints Committees that serve willingly and diligently, without compensation, to resolve professional matters assigned to them. Several of these Committees include among their functions the consideration of personal problems of individual AIC members. Among these Committees are those on Manpower, Professional Education, and Employer-Employee Relations. When requested, individual matters are handled confidentially, while the best of the Committee's knowledge and experience is made available to the enquirer.

Several annual reports of the Committees who served in 1954-1955 are in this issue of THE CHEMIST. They indicate some of the matters which the Committees have considered.

AIC members who have suggestions or problems to present to Committees may either submit them to the chairmen or send them to the AIC Secretary to be referred to the appropriate Committee. Make use of your Committees! They are one of the services made available to individual members of the INSTITUTE.

The following Committees are serving for the fiscal year, 1955-1956:

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Preparation of Manual of National Council Operation

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Presentation to Dr. A. R. Choppin

(Reported by Dr. Winston R. deMonsabert, Associate Professor of Chemistry, Loyola University of the South, New Orleans, La.)

THE HONOR SCROLL of the Louisiana Chapter of THE AMERICAN INSTITUTE OF CHEMISTS was presented, May tenth, to Dr. Arthur Richard Choppin, dean of the College of Chemistry and Physics at Louisiana State University, at a dinner meeting of the Chapter at Lawrence's Restaurant, New Orleans. Dr. Carl M. Conrad, chairman of the Chapter presided. Father H. R. Jolley of Loyola University gave the invocation.

Professor Paul F. Bailey of Loyola University, chairman of the Awards Committee, introduced Dr. John B. Entrikin, head of the Chemistry Department, Centenary College, Shreveport, La., who made the presentation address and presented the Honor Scroll to Dr. Choppin.

In presenting the award, Dr. Entrikin spoke in part as follows:

The recipient of our Honor Scroll for 1955 was born December 13, 1897, in Alexandria, Louisiana. He was born in the middle of our state and has literally been in the middle of a great variety of activities ever since. Dean Choppin received the B.A. degree from Louisiana State University in 1918. He was graduated early in order that he might serve as an officer in the American Army in France. In 1919 he was married to Miss Eunice D. Bolin, a native of Louisiana. They have two sons, Arthur Richard, Jr., and Purnell Whittington.

After serving in the public school system as a teacher and coach, Dr. Choppin returned to Louisiana State University where he received the M. S. degree in 1925. He has been on the chemistry faculty of that university since that time, except for a leave of absence to obtain the Ph.D. degree from the Ohio State University in 1929. He has progressed through the faculty ranks at an accelerated rate and was appointed dean of the College of Chemistry and Physics and head of the Department of Chemistry in 1944.

Dean Choppin is a member of all of the major scientific societies in America that are open to chemists. He has been a Fellow of THE AMERICAN INSTITUTE OF CHEMISTS for many years and is listed in *Who's Who in America* and *American Men of Science*. He is an active Rotarian and is a member of the National Executive Committee of the American Legion.

The Honor Scroll of THE AMERICAN INSTITUTE OF CHEMISTS is, as we all know, awarded primarily on the basis of the services rendered by the recipient to chemists as individuals and not particularly on the basis of contributions made to the profession.

Dean Choppin would qualify on either basis. However, I shall speak concerning his contribution to chemists as individuals. A person's contribution to chemists as individuals should be considered on a very broad basis. Chemists are not merely chemists. They start out as young men and women with all of the normal interests of other people. In order to develop adequately they need an environment which is wholesome, politically, economically, and socially; they need an America which is strong, free, and well-governed. The life which Dean Choppin has lived proves that he considers all of these things to be important to chemists. For that reason he has taken a very active part in the affairs of his university and his state outside of the chemistry department. He has at various times served in the following capacities:

Member of the Louisiana Academy of Sciences. Professional District Councillor for Alpha Chi Sigma. Director of Industrial Relations, Louisiana Academy of Science. Past State-Commander of the American Legion. Member of the Baton Rouge Community Recreation Council. Louisiana State Civilian Gas Consultant (during last war). Member of the State Emergency Relief Board. President, Baton Rouge Rotary Club. Chairman of the University Committee on the Graduate School. Member of the University Budget Committee. Member, Inter-American Relations Committee of Louisiana State University. Director of Pelican Boys' and Girls' States and Bayou Boys' State (10 years). Member of the National Boys' State Committee of the American Legion since 1947. Advisory Member of Economic Development Committee of Louisiana. Member of the University Selective Service Board (Chairman during last war). Member of the Athletic Council, Louisiana State University. Director of Radiological and Chemical Defense for the State of Louisiana. Organized and was the first president of the Baton Rouge Section of the American Chemical Society.

He has always spent a great deal of time working with individuals who are studying chemistry at Louisiana State University and in keeping up with those who have gone on into a professional field. It can be truly said that he has spent thirty years helping those who hope to be chemists and those who have already entered the profession.

Many of the twenty-two papers of which he is either author or co-author deal with ways to make the work of the chemist easier.

The citation on the Scroll reads:

to Arthur R. Choppin

for a generation of service to the chemist through chemical education

In his extemporaneous acceptance speech, Dr. Choppin stressed the serious shortage of chemists in the United States and pointed out that the situation would probably become worse in

the next few years. He said that an important factor in this connection is the lack of teachers at the high school level who can competently teach science and mathematics.

At this meeting, student medals and associate memberships in THE AMERICAN INSTITUTE OF CHEMISTS were presented by Prof. Paul F. Bailey of Loyola University to the following outstanding students:

Lee T. Freeland,
Loyola University
George F. Helfrich,
Tulane University
Truett J. Lemoine,
Louisiana State University

A resolution in memory of Dr. Gustav Egloff, Hon. AIC, who died April 29, 1955, was presented by Harold A. Levey, national AIC council representative from the Louisiana Chapter. Dr. Egloff had been one of the founders of the Chapter.

International Symposium: On Macromolecular Chemistry to be held in Rehovot, Israel, April 3-9, 1956, under the auspices of the International Union of Pure and Applied Chemistry and the Weizmann Institute of Science. For information: International Symposium on Macromolecular Chemistry, the Weizmann Institute of Science, Rehovot, Israel.

Announced: By Central Scientific Co., Chicago, Ill., the election of Richard N. Golbach as vice president.

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Scholarships: Offered by the Scholarship and Student Loan Fund Committee of Special Libraries Association; Two of $500 each for the academic year 1956-1957 for graduate study in librarianship, leading to a degree at an accredited library school. For application blanks to be returned by March 1, 1956: Executive Secretary, Special Libraries Association, 31 E. 10th St., New York 3, N. Y.

Change of Position: Elbridge S. Stevens, M.A.I.C., is employed in the Research Department of the Bon Ami Company, New York 6, N. Y. He was formerly with Colgate-Palmolive Company.

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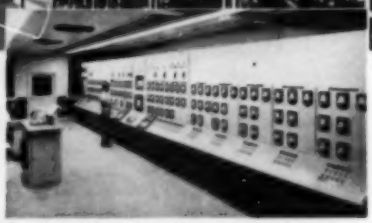

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Utilizing Consultants

Paul W. Bachman

Vice President, Davison Chemical Co., Div. of W. R. Grace & Co., Baltimore 3, Maryland

(Presented before the Thirty-second Annual Meeting of the AIC, Chicago, Ill., May 12, 1955.)

IN DISCUSSING this subject I must necessarily refer to definitions previously made of the types of chemical consultants and their functions:

(a) *Group Consultants*: Organizations of men of widely varied skills and experiences, who have been gathered together to provide a client with overall service in a broad variety of fields.

Examples of the types of projects frequently referred to such consultants are those concerned with the commercialization of a research project, a need for additional capital to acquire another company, or the contemplation of large research expenditures in new fields which a client is considering entering.

(b) *Specialized Consultants*: Individuals highly skilled in some particular art, either operating as individuals or with a few assistants who carry out detailed assignments.

Examples of the types of projects frequently referred to these consultants include application research on new products, an investigation of a type reaction requiring the highly specialized skill of the consultant, or the design and utilization of specialized equipment.

(c) *General Consultants*: Individuals who are not employed as specialists in a particular field, although they may have special fields of interest. They should have a broad outlook and stimulating and imaginative minds.

The general consultant is the chemical Father Confessor and confidant to a research organization. His interests may well cover all corporate chemical activities, of both a technical and personal nature.

Before proceeding to discuss "Utilizing Consultants" which might also be called "Working with Consultants," let me state that my remarks are based upon a belief in the integrity and intellectual honesty of the consultants employed. If there are any doubts on this score, relations with the consultant should be severed immediately, or, if this is not possible, communications with him should be appropriately controlled. This would be an unfortunate situation, but it can arise. And it is no more of a reflection on consultants in general than a physician guilty of malpractice is on the medical profession. It is just a fact in life that such individuals exist.

While I do not advocate doing business with consultants charged with sharp practices, I should point out that one must be prepared to do so. This is so because occasions may arise when there are available only a few consultants experienced in the particular field of interest. You may be forced to accept the services of a sharp consultant. If so, then by all means control communications to the extent that the consultant receives only that which he absolutely requires.

A frequent major source of difficulty in working with consultants results from a failure to clearly define the indefinite terms which may be used in simple words which cannot be misunderstood. Invariably the objectives of a project are well thought out and defined, for one realizes that he is spending company funds in employing the consultants. So the preamble to the consultation is carefully worded. However, once the consultation starts there may arise a failure to define general terms which will be used in describing factors and conditions upon which the consultant will base his conclusions. This definition of terms is more important in dealing with consultants than in dealing with your own personnel. I suggest that you follow the advice of Aristotle who said "if thou would'st discuss with me, define thy terms." If the important terms to be used are clearly defined as they arise and are adequately understood, there should be no other misunderstanding. This will eliminate the frustrating gobble-de-gook and the necessity for listening, as the consultation approaches an end, to such words as "when I said that, I meant this." The necessity for defining terms is most important and sometimes difficult to achieve.

Now that we have discussed the necessity for continuously evolving a glossary of terms and definitions, let us consider how we might work with these various types of consultants by using a few illustrations.

Suppose that you have employed a consulting group to advise you on the desirability of installing a new chemical operation at a new and as yet undetermined site. Your staff has developed a process to make a product more cheaply than a comparable product currently made and sold by others. Preliminary designs have been completed, the markets studied, and the economics established. All seems well. But because of the magnitude of the capital involved, you have elected to call in a group of consultants to check the collective judgment of your organization. Both you and the consultants face a very difficult task. You must make it possible for them to secure the data they require to reach an independent conclusion free of bias. Since you, the consultants, and your staff are all human beings subject to many emotions, this is not a simple task.

Consider yourself first. Having authorized or recommended the expenditure of research funds to bring the project this far, you undoubtedly believe in it. But inside of you there may be a lurking thought that somehow, somewhere, something has been overlooked. If such is your mental process and time permits, you will minimize the calculated risk by employing consultants to review the project and advise you. So you are in the position of believing that you and your staff are right, but fearing that you may be wrong. You will, therefore, be eager to determine the

truth to the best of your ability.

Consider the consulting group next. They know that this is a nice contract and, if they agree with you, other contracts will probably follow. But on the other hand, their future success and reputation depends on finding the truth in accordance with the facts. And since they know your staff will view them as investigators, they realize that personal contacts may be difficult. They approach the consultation gingerly.

Now consider your staff. The natural pride of accomplishments lies within them, and they may resent questioning by the consultants. This is normal and, while you would not want a staff to feel otherwise, it is not too pleasant a background against which to develop a harmonious consultation.

Before your first meeting with the consultants discuss the objectives with your associates, and plan how you can most effectively make available the information which the consultants will require. This is difficult. Your associates must be convinced of the necessity of presenting only facts, and that calling in the consultants in no way is a reflection on their abilities. You must convince them that your action is intended to insure, to the maximum degree possible, against making what might be a catastrophic mistake. Tell them of your thinking, your hopes, and your fears. And finally, try to have your associates accept the consultants like guests in a home and treated accordingly.

In the first meeting with the consultants, it would be well to review all of the foregoing with both groups in attendance. Then a background of appreciation can be established. At this meeting agreement should be reached as to the channels of communications, and how requests for information will be handled. Establish areas of responsibility which various members of your organization will assume in making available to the consultants the information which they require. Perhaps pilot plant runs will have to be repeated for their edification.

From this point on, divest yourself of all details. Serve only as an eliminator of road-blocks until the consultants request a meeting to discuss their preliminary findings or any portion thereof. By so doing you thrust responsibility for action on them, rather than having them thrust it on you. You are working with them at their pace, rather than having them work at yours. Responsibility for consulting action is where it should be, on the consultants, not on you.

Finally a day will come when the consultants request a meeting to discuss their findings on some phase of the project, or perhaps on the project as a whole. Now comes the fun. While you may have worked with a number of explosive reactions in the course of your life, it is well to reflect that you now have at hand a potentially more explosive situation than you probably have faced prior to this

time. The consultants on one side may present findings and conclusions which vary widely with the opinions and conclusions of your staff sitting on the other side. While all are pleasant, all are just a bit touchy. Either group may find itself in a position where its opinions and conclusions may be disputed. It is, therefore, only natural for both to arrive well fortified with facts with which to support their contentions.

In your position you must work with both of these groups. You seek, therefore, to develop the meeting along harmonious lines. One way to accomplish this is to consider the consultants as though they were guests in your home and, as such, participating in an active discussion. You should do your best to prevent a violent conflict of opinions from arising, since it could result in animosity between consultants and staff. You must draw upon all of your tact and courtesy. It is well to remember that it is not necessary that this meeting result in any definite conclusions. It might be better not to have conclusions reached at this time. If it appears likely that reaching a conclusion might result in a loss of "face" by an individual, it might be better to prevent such a situation from arising. This can be done at a propitious moment by suggesting that there is considerable evidence to support both points of view; that you personally are confused and that you would like to suggest that the participants to the discussion meet privately and attempt to resolve their differences. This should have a calming effect, and it may do much good. It gives the individual in the weaker position a chance to gracefully change or modify his position. And this will be done under conditions where he is not subjected to the glances of the entire group. This will not result in a waste of time. It may, in the long run, greatly accelerate the project. Usually, when two individuals having widely divergent views are given the opportunity to discuss them privately, they find some common meeting ground or a satisfactory exit.

This is important. You must develop a harmonious background against which to work with the consultants and you must remember that they are like guests, even though paid for their services. And you hope that no member of your staff will act like son Jimmy and say, "why does Daddy give Mr. Smith the breast of the chicken while he gives me the neck." If tact is used, friendly feelings and mutual respect for one another can result. Then you will work very easily with the consultants and much good will come of your efforts.

Perhaps one might raise a question here as to why you don't consider your staff as well as the consultants. First, because you are paying the consultants to give you an unbiased and truthful report; second, because you and your staff are the hosts and can withhold necessary information; third, because consultants usually realize

that they may touch tender spots of one or more staff members and therefore proceed cautiously; and fourth, your staff should know your understanding of them and your belief in them. If this last does not hold, then you are mis-cast.

Ultimately you meet with the consultants to discuss their final report. By this time it is to be hoped that there have been a sufficient number of meetings and side conferences to resolve differences, and that an appreciation of each other's ability and integrity exists.

Depending upon the findings of the consultants, your task may or may not be an easy one. If they favor your view, you will not have too much to do except preside at a mutual admiration society meeting and lead a discussion concerning future plans. On the other hand, if the findings of the consultants are opposed to those of your organization and it is obvious that they are right, your position is not too difficult. You eat crow and quickly. But be grateful that the consultants and not your management are feeding you the crow. If management were doing the feeding, the crow might be indigestible.

The difficult case, however, is the one wherein the consultants disagree with your findings and their position appears open to question. Here you have the makings of a real Donnybrook Fair. This situation, while unpleasant, must be handled. It may be that previous meetings or conferences between individuals were unsuccessful in resolving differences. At this point you must elect to support either your staff or the consultants, or conduct additional research to clarify the points at issue. The privilege of making that decision is not an enviable one.

Working with specialized consultants is much easier than working with a consulting group. This is so because fewer personalities are involved, the problem is less broad in scope, and the specialist is quite likely to know more about it than you. It is somewhat like comparing the medical diagnostician with the surgeon. Anyone can argue with a diagnostician, for he frequently bases his conclusions on symptoms and deductive logic rather than facts. The surgeon, however, is a bit harder to argue with. His entrance into the picture usually is based on facts. So with the specialized consultant. He usually is called in to do something with which he is quite familiar and concerning which he has many facts. That is why you employ him. His approach is direct and concise and it is usually a matter of testing this or that to see whether or not it will work.

Undoubtedly the general consultant is the easiest one with which to work. This is not because of personal characteristics, but because the general consultant usually enjoys a continuing relationship and does not have a definite objective to reach within a given time. The time factor permits you to

learn to know him and to appreciate him. It presents him with a similar opportunity concerning you.

He should have this same relationship with your staff. Do not take up the general consultant's time except for a few minutes at the beginning or end of each visit unless he requests you to. After all, you employed him to work with your staff and consult with them on their problems.

But always take him into your confidence. This can best be done at periodic luncheons or dinners. As a result he will undoubtedly make many interesting observations which you will wish to follow up. His formalized efforts will become apparent in the conferences which will be held to discuss specific subjects.

Now how does this all add up. My topic was one involving working with consultants. From the technical side it does not present much of a problem, if you make available to them the information they require. But from the personal side, complications, principally from your staff, may arise which affect the work of the consultants. So this brings us to the field of human relations, one of the most difficult. And the extent to which such relations influence your ability to work with consultants is probably dependent, in large measure, upon the amount of thought and effort you put into preparing the ground work upon which the consultation is based. A great deal depends on you and your ability to exercise tact and show consideration for others.

Announced: By Ralph Wechsler, F.A.I.C., president of Nopco Chemical Company, Harrison, N. J., the appointment of G. Daniel Davis as executive vice president.

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To Pakistan: C. C. Concannon, F.A.I.C., who heads the Trade Information Center of the U. S. Department of Commerce, at the Pakistan International Industries Fair, Karachi, Sept. 2nd to Oct. 2nd. A complete television station, with closed circuit, and displays of latest American industrial fields are featured. Mr. Concannon will return via Tokyo in November.

Elected: Dr. Ray P. Dinsmore, AIC president, as an Honorary member of the Chemical, Metallurgical & Mining Society of South Africa, for the year ending June 30, 1956.

What Chemists and Chemical Engineers are Doing at the Petroleum Experiment Station

Dr. Harold M. Smith

Petroleum Experiment Station, U. S. Bureau of Mines, Bartlesville, Oklahoma

ARE YOU interested in the characteristics of crude oil from all parts of the world? Do you want to know the composition of specific crude oils? Will detergents assist in removing crude oil from underground reservoirs by water flooding? What sulfur compounds are in crude oil? How can they be separated and identified? Is gum formation in fuels a problem to you? Is there a difference in the way fuels from different crude oils burn? Do you have a problem arising from the production of condensates? Can any type of water be used for water flooding? How can the flow of water be traced underground? Do the physical characteristics of the reservoir sands affect oil recovery? Do you have the thermodynamic data necessary to evaluate your processes?

Those who seek the answer to these or related questions come to the Petroleum Experiment Station at the U. S. Bureau of Mines, Bartlesville, Okla., for assistance. Certainly the bureau does not have all the answers, but current research by its chemists and chemical engineers is providing information that is helpful.

The Petroleum Experiment Station was established in Bartlesville, in 1918, when the Bureau of Mines moved its petroleum research from Pittsburgh, Pa., to Bartlesville, with the assistance of the citizens and on a cooperative basis with the State of Oklahoma. It is the only Federal experiment station devoted exclusively to petroleum research. It started with a small staff of twelve persons, working in a small office building and a combined laboratory and garage. Its physical assets and staff have grown with the petroleum industry, but not commensurably. The present plant consists of a three-story combined office and laboratory, with basement, the original laboratory building, a cold room, pilot-plant building, and several temporary structures. The original buildings were on a city block, deeded to the government by W. B. Keeler, one of the pioneer residents of Bartlesville. An adjacent block has been acquired, on which there is an up-to-date radioisotope laboratory. The present staff is about one hundred and fifty persons, of whom seventy-five per cent are chemists or engineers with degrees.

The annual budget approaches one-million dollars, of which seven-hundred thousand is from Congressional appropriations; sixty-thousand from the State of Oklahoma, and the bal-

ance from cooperative agreements with several technical institutions typified by the American Petroleum Institute and the American Gas Association.

Technically the station has four branches: (1) Primary Production, which conducts research concerned with fields and wells having enough potential energy to produce crude oil without stimulated methods; (2) Secondary Recovery, which studies stimulative methods and means of increasing and continuing production after natural energy is no longer sufficient to produce oil; (3) Thermodynamics, which conducts fundamental research on the thermodynamic properties of hydrocarbons, and of hydrocarbon derivatives, of sulfur, nitrogen, and oxygen; (4) Chemistry and Refining, which studies the composition of crude oil and the relationship of the components of crude oil and its products to their utilization.

In the early days, chemical work was only a minor part of the research. Today, seventy-five per cent of the research involves chemistry and chemical engineering, and many phases of chemistry such as organic, surface, thermodynamic (both chemical and PVT), physical spectroscopic, and radio isotope are involved. This diversification keeps the Experiment Station abreast of new developments. The equipment necessary to carry out the researches is also available, but space is at a premium.

A brief synopsis of the work in several fields will indicate the scope and direction of much of the investigative work.

Crude Oils

For many years the Bureau has made a routine-type analysis of crude oils that gives a good picture of their general characteristics. Several thousand of these analyses are available, all made on a comparative basis. Most have been published. Additionally, more detailed analyses have been made of selected crude oils, and by correlative means the routine-type analyses can be interrupted to provide more detailed data. In recent years, much of this work has been done for the Air Materiel Command under cooperative agreements to provide a continuous up-to-date picture of the availability and characteristics of crude oils and their major products.

Sulfur Compounds

The types and quantities of sulfur compounds in petroleum have been a major problem for many years. In 1948, the American Petroleum Institute established Research Project 48. Part of this project, relating to the separation and identification of sulfur compounds, is conducted at the Bartlesville Station, and in the relatively short period of its existence the project has identified 43 sulfur compounds in the distillate boiling to 160°C. from Wasson, Texas, crude oil; has developed chemical and physical methods for separating sulfur compounds in petroleum and has

shown that most of the sulfur compounds in Wasson crude oil boiling above 250°C. are probably thiophenes condensed with one, two, three, or more, aromatic rings.

Fuel Stability

The advent of catalytic cracking brought with it problems of fuel instability, both for distillates like diesel fuel and also for motor gasoline. The Western Petroleum Refiners Association has sponsored for the last several years studies of the causes of instability of distillate fuels and of blends of apparently stable fuels. This work has included a comprehensive storage program, development and application of liquid phase oxidation at low temperatures and atmospheric pressure; chromatographic separation of the fuel into its hydrocarbon types and chemical studies of each; determination of many properties, such as ultimate analyses for carbon, hydrogen, oxygen, nitrogen, and sulfur, trace metals; fuel composition in terms of aromatic and naphthene rings and paraffin chains; and several other parameters. Progress reports have been published so far, but the data are being prepared for publication. For part of this period, the Bureau of Ships of the Department of the Navy also contributed toward the research.

Hydrocarbon Combustion

In conjunction with the study of distillate fuels, particularly diesel fuels, one of the problems is the relationship of fuel composition to behavior of the fuel when it is burned in a diesel engine. Recognizing that the over-all combustion is the result of the combustion of numerous types of hydrocarbons contained in the fuel, the Bureau has developed, in conjunction with the Diesel Fuel Division of the Coordinating Research Council, a constant-volume combustion-bomb, which in a few minutes and with the use of only a few tenths of a milliliter of fuel, can give a good indication of the effects of temperature, pressure, and combustion atmosphere upon the combustion of a given fuel. Because this tool only requires a fraction of a milliliter for a test, it is particularly applicable to the study of the combustion of pure hydrocarbons, and now that the instrument has been developed to where it is reliable and gives reproducible results, attention is being given to studying the variations in the combustion characteristics of different types of pure hydrocarbons, as paraffins, naphthenes, aromatics, and olefins, in the hope that from these data a more intelligent appraisal of the characteristics of natural petroleum fuels can be made. This work is supplemented by engine data from a highly instrumented research diesel unit, and should eventually provide much basic data needed to properly evaluate the combustion of diesel fuels.

Thermodynamic Studies

Probably the most fundamental study being conducted is the determination of thermodynamic data of hydrocarbons, sulfur compounds, and associated derivatives. The science of thermodynamics is playing a key role in the development of the petroleum industry. The Experiment Station has one of the few thermodynamic laboratories in the country, so organized, staffed, and equipped that it can provide accurate and internally consistent thermodynamic data for the use of the petroleum industry. This work is carried along five main lines of investigation. These are: Low temperature calorimetry; combustion calorimetry; vapor heat capacity and heat of vaporization measurements; pressure, volume, and temperature and vapor-liquid equilibrium measurements; and statistical mechanical calculations. Hydrocarbons, sulfur compounds, fluid compounds, and more recently, nitrogen compounds, and to a limited extent oxygen compounds have been studied.

Surface Chemistry

The flow of fluids through porous media is a fundamental study. It is one that is intimately associated with the production and recovery of petroleum in underground reservoirs. Recently the physical chemical properties of clays that form part of the reservoir rock from most petroleum reservoirs have been shown to have an important part in the production of crude oil. Significant contributions to the fundamental knowledge of electro kinetics and precise electrical conductivity measurements have been made as a result of the studies now under way. Closely associated with the flow of fluids through pores are the surface active and film forming constituents of petroleum, particularly those materials known as porphyrins which have been shown to be important because of their surface activity and because they apparently relate directly to the original source material of the crude oil.

Water Flooding

In the field of Secondary Recovery, methods of conditioning water so that it is suitable for water injection underground have received much attention. In conjunction with the water-conditioning studies, an amperometric instrument has been constructed for the quantitative measurement of dissolved oxygen in brines in the presence of ions that interfere with other analytical methods. The results of field studies of water-conditioning plants and methods pointed out the need for basic information on the corrosion caused by the dissolved gases commonly found in oil field waters. Equipment is now in use for determining quantitatively the corrosivity of steel in water of the gases oxygen, free carbon dioxide, and hydrogen sulfide. These gases, singly and in the proportions usually found in field installations, have been and are being used as corrodents. Other variables

influencing corrosion are maintained constant.

Additives to the water to trace its course underground are being actively sought, and in this connection the use of various radioactive isotopes are being studied. Laboratory and field studies have demonstrated the practicability of using radioactive iodine (iodine 131) as a tracer for injection waters. The radio-tracer method has proved to be useful for both determining horizontally the rates and patterns of flow of injected water between wells within a specific area and for determining the vertical zones of excessive water entry into oil-production wells. This method of making water-production profiles is the first known positive method for detecting the points of water entry into the oil wells, and makes possible the application of chemical and physical methods of remedying the detected anomalous conditions.

Considerable interest has been exhibited in the use of wetting agents, as injection-water additives, for the purpose of increasing the injectivity of water and the productivity of oil. Numerous nonionic detergents have been evaluated in the laboratory to determine the efficiencies of these compounds in displacing oil from sand and increasing the injectivity of water. Absorption of detergents on sand surfaces has been studied by surface tension, spectrophotometric, and radiotracer methods (using detergents tagged with carbon 14).

Physical Chemistry in Oil Field Production

A substantial part of the domestic reserves of natural gas and natural-gas liquids are classified as gas condensate fluids. The economic recovery of these reserves requires a knowledge of the unique phase relations of the fluids under high pressures. For a number of years experimental studies have been made of the compressibility and the relationship of liquid and gas volumes of the fluids at pressures and temperatures significant in recovery processes. The results of these studies have been correlated with phenomena that can be readily measured, and currently a manuscript is being prepared in cooperation with the American Gas Association for publication of the extensive information that has been gathered and analyzed.

The foregoing brief review describes some of the fields in which chemists and chemical engineers are making progress at the Petroleum Experiment Station. This Station is a public institution, supported by the taxpayer, and its research is made available to all for the maximum benefit of all.

If this review indicates fields of research in which you are interested and if the information being obtained by the chemists and chemical engineers at the Experiment Station could be useful to you, you are encouraged to write directly to the Station.

Communications

Professional Chemist vs. Non-professional Chemist?

To the Editor:

A research chemist employed by an individual employer or corporation is not a professional person. There is no client relationship. A research captive chemist is an instrumentality of his employer. He is hired to invent. He receives a paycheck in advance of making an invention.

An invention is a conception. The research chemist is hired to conceive inventive matter on pain of losing his job. His inventive conception from the moment of birth belongs to the company. If he should decide to quit his job he can be forced by court order to sign over his invention or suffer contempt of court. (Standard Parts vs. Peck 26 4 U.S. 52 and Mississippi Glass Company vs. Franger 43 F. 501).

The inventive conception is the corporate property at all times. Thus the invention is a corporate invention and should be granted in the corporate name.

The Patent Law of 1790 is archaic in this respect. It was written when there were no industrial corporations. The patent was a governmental reward. In some countries the reward is monetary in lieu of a patent, and this possibility for the United States has often been discussed.

A corporation is a non-human being since it can do many acts that humans can; for example, make contracts, hire and fire people, pay taxes, sue and be sued in court, etc. But not being human it can not take out its own patent under its own name.

This is because of the 1790 law which requires the invention to issue in the name of the inventor. (There were no corporations to receive patents in 1790).

There then arose the fiction of assignment of invention to the corporation which at all times owned the invention.

It is high time to abolish this assignment fiction and to place truth and honesty into the law. In England and other European countries, corporations take out patents in their own name since the invention disclosed in the patent is the personal property of the corporation.

Truly the United States should not lag behind in the patent field by resorting to legal fictions.

A consulting chemist by way of contrast is not hired to invent but only to give advice. Therefore any inventions he makes, even if conceived while working on corporation problems belong to him. Therefore he is a professional as he is not under compulsion to assign over inventions.

—Dr. Frank Makara, *F.A.I.C.*
New York, N. Y.

Permission Granted

To the Secretary:

We are requesting permission to reprint the talk, "Motivation of Production People," by Dr. M. E. Putnam, executive vice president of The Dow Chemical Company. (June 1955 Chemist). The talk is to be reprinted in Mexico by the Sales Executives Club in Mexico, for distribution to their Chamber of Commerce members.

—Paul L. Filter
New York, N. Y.

Memory Cherished

To the Editor:

The "surprise" parcel of copies of the August issue of The Chemist has just reached me.

Really, I am touched by this further courtesy, it coming after so many other manifestations of good will extended to me by The American Institute of Chemists. To you and to the Institute I express my heartfelt appreciation.

By the way, the front cover of this issue burst upon me as a further surprise! Where did the Editor uncover this picture? I have a vague memory of the time and place this photo was taken about ten years ago. My friends to whom I shall send these copies may say, like Little Red Riding Hood: "O grandpa, how you have changed!" Four score years (next January) will leave some traces behind.

The whole Akron episode comes to me when my shadow is lengthening. I will cherish the memory for all remaining time.

—Dr. William J. Wohlleben,
F.A.I.C
Dayton, Ohio

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Albin H. Warth, *Baltimore Chapter*
L. T. Work, *Past President*

June Meeting

A meeting of the National Council of The American Institute of Chemists was held June 16, 1955, at noon, at The Chemists' Club, New York, N. Y. President Ray P. Dinsmore presided.

The following officers and councilors were present: R. P. Dinsmore, L. A. Hall, K. M. Herstein, F. A. Hessel, D. B. Keyes, J. Kotrady, H. W. Mackinney, J. H. Nair, G. L. Royer, W. J. Sparks, L. Van Doren, and L. T. Work. L. T. Eby, chairman of the Membership Committee, H. A. Neville, and V. F. Kimball were present.

President Dinsmore asked approval of the Council to set up a committee on professional liaison with other societies.

Dr. Work, chairman of the Finance Committee, reported the recommendation of the Board of Directors that the Council ratify the new budget for 1955-56, and this budget was approved.

The Treasurer's report was approved.

The Secretary presented his report, showing that we now have a total membership of 2840.

The Secretary announced with deep regret the deaths of:

Dr. Leo M. Christensen, F.A.I.C., June 6, 1955.
Dr. Albert E. Edel, F.A.I.C., a Charter Member, June 7, 1955.
Dr. Albert F. Guiteras, F.A.I.C., May 26, 1955.
Dr. John P. Marble, F.A.I.C., June 7, 1955.
Lester Quint, A.A.I.C., May 5, 1955.
Willard I. Upson, M.A.I.C., October 1954.

A brief moment of silence was observed in memory of these members.

A letter from Mr. Reichardt, president of the Washington Chapter, was presented concerning recommendations for the United States Civil Service Commission Classification Standards for the Chemistry Series. Dr. Royer, chairman of the Committee on Employer-Employee Relations, who made the original recommendations concerning this matter, was requested to prepare a letter to the Civil Service Commission, to be signed by the AIC Secretary.

Committees for 1955-1956 were appointed. (See list on page 357).

Mr. Kotrady reported that the New York Chapter met, June 2nd, to present its Honor Scroll to Dr. Henry B. Hass.

Dr. Hall announced that the Chicago Chapter is using its *Newsletter* to announce meetings. A brochure has been prepared describing the AIC activities in the Chicago area. He recommended that reprints of the proposed contract form should be sent to various firms who might be interested. This matter was referred to the Employer-Employee Relations Committee.

Dr. Mackinney announced that the New Jersey Chapter will meet Oct. 26th, with the American Chemical Society and the American Institute of Chemical Engineers to hear a panel on high school science teaching. On December first, the Chapter will hold a meeting on the subject of leadership.

Dr. Hall announced that the Chicago Chapter will present its Honor Scroll on Sept. 30th, to Dr. Charles C. Price, director of the Department of Chemistry of the University of Pennsylvania. Dr. Price, until recently, was a member of the Chicago Chapter.

Dr. Royer reported for the Committee on Employer-Employee Relations.

The following dates were selected for meetings of the National Council: Wednesday, October 12, 1955, and Wednesday, December 14, 1955. Both meetings will be held at 6:00 p.m. at The Chemists' Club, New York, N. Y. The Board of Directors will meet at 5:30 p.m.

The matter of employment of persons over fifty was discussed. It was agreed that there are more competent chemists over fifty than ever before. Problems in this category will be referred to the Committee on Employer-Employee Relations and to the Manpower Committee for recommendation.

The selection of a meeting place for the Annual Meeting of 1957 was referred to the October meeting of the Council.

The following new members were elected:

FELLOWS

Houtz, Ray C.
Toni Co. (Gillette), 456 Merchandise Mart, Chicago, Ill.

Margulies, Dr. Paul H.
In Charge, Technical Information & Development, Becco Chemical Div., Food Machinery & Chemical Corp., Station B, Buffalo 7, N. Y.

Mellecker, John B.
American Institute of Chemical Engineers, 25 W. 45th St., New York 36, N. Y.

Pantzer, Myron
Vice President, Panray Corp.; *President,* Parlem Corp.; *President,* Apod Corp., 340 Canal St., New York 13, N. Y.

Pastor, Harold P.
Chemist, U. S. Department of Agriculture, Southern Utilization Research Branch, 2100 Robert E. Lee Blvd., New Orleans, La.

Sadowsky, Meier
Chief Chemical Engineer, Philco Corporation, Lansdale, Pa.

Sumner, Thomas
Head, Department of Chemistry, The University of Akron, Akron 4, Ohio.

MEMBERS

Murphy, Paul J. Jr.
Chemist, Southern Regional Research Laboratory, 2100 Robert E. Lee Blvd., New Orleans, La.

Rafson, Harold J.
Chemical Engineer, Central Research Labs., General Foods Corp., 1125 Hudson St., Hoboken, N. J.

Schnable, George L.
Project Engineer, Philco Corporation, Church Road, Lansdale, Pa.

REINSTATED AS FELLOW

Dargan, William H.
Consultant, Box 383, Alliance, Ohio.

Report of the Committee on History of the AIC

Following the preliminary announcement in THE CHEMIST, December 1954, letters were sent to the chairman of each Chapter of the INSTITUTE, soliciting cooperation through the appointment of a local standing committee, members of which will be willing to assist the Central Committee until the project is completed.

To date, the following appointments have been reported:

Louisiana: Harold A. Levey
New England: Dr. A. W. Fisher, Dr. George B. Walker, Raymond Stevens
New York: Dr. Donald Price

When available, the complete list will be published in THE CHEMIST, so that members, anywhere and everywhere, may know to whom they can send items of interest.

The general plan is for everything of local interest to be assembled by the Chapter editors, who will, in turn submit their information to the Central Committee. Members not directly associated with a local Chapter are asked to send pertinent material — anything that they may have saved from early days — either to the nearest Chapter editor or to the New York office of the INSTITUTE .

The history of the INSTITUTE is everyone's project. Every member is invited to contribute whatever he considers to be worthy of record. Progress will be reported to the Council and through THE CHEMIST from time to time.

—Florence E. Wall, *Chairman*
Dr. M. L. Crossley
Albert P. Sachs
Dr. John A. Steffens
Dr. Lloyd Van Doren

Annual Report of the Committee on Patents

The principal concern of the Committee during the past year, and at the present time, has been the question of the Atomic Energy Act of 1954, particularly the sections relating to patents. Sections 152 and 153 appear to be of questionable constitutionality to the extent that the Atomic Energy Commission may expropriate inventions beyond those to which it is entitled by contract or general property law. Further, the provisions for compulsory licensing is in derogation of the exclusive right guaranteed to the inventor by the Constitution and patent statutes.

It is sought to have the Act amended to restore the incentives of the Patent System and at the same time avoid any possibility that patents might obstruct rather than promote atomic progress. Two bills have been introduced in the House: H.R. 1777, on January 10, 1955, by Representative Cole, seeking the repeal of Sections 153 and 154 of the Atomic Energy Act; H.R. 5167, introduced March 23, 1955, also by Representative Cole, similarly seeking the repeal of Sections 153 and 154 and the amendment of Sections 152, 155, 156 and 157. Both bills have been referred to the Joint Committee on Atomic Energy.

Another measure, H.R. 4983, was introduced by Representative Celler, and referred to the Committee on Judiciary. This seeks to increase patent and trade mark fees payable in the Patent Office. For example, the filing fee for a patent application is proposed to be increased to $40.00 with $5.00 for each claim in excess of five; the proposed final fee is increased to $50.00, with $5.00 for each claim in excess of five.

Your Committee will watch the progress of these and other measures, and take such steps as may be advisable to make known our views with respect to the various issues.

—A. J. Deller, *Chairman*

Annual Report of the Committee on Employer-Employee Relations

The Employer-Employee Relations Committee has worked on several functions during the year. Its Subcommittee on Contracts gave a preliminary report at the previous Annual Meeting. A number of comments received from various industrial organizations and from the membership were incorporated into a final draft which was approved by the Council this last year. The final Employment Agreement was published in the March 1955 issue of THE CHEMIST and reprints are available to anyone wishing to use this form. (Reprints are available from the AIC Secretary at 15 cents each.)

Correspondence has been carried out

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with a number of members relative to problems which they felt should be brought to the attention of this committee. Some of these may lead to further work and study by the committee.

Civil Service in Washington was contacted relative to the Standards for Chemists which it is establishing. The committee has received a copy of the Standards for Analytical Chemists and this is being reviewed, both by representatives of the Washington Chapter and by our committee.

The committee has been interested in the subject, unionization of chemists, and is suggesting the reprinting in THE CHEMIST of an article on this subject by Mr. Gerry Morse of Minneapolis-Honeywell, since Mr. Morse was not available for the presentation of a new paper at the Chicago meeting. (This article is scheduled for the November issue.)

Communications from several of our members indicate that the AIC might give consideration to certain employer responsibilities as they apply to professional people. Specifically, this might be in the areas of retirement benefits and financial remuneration in compensation cases where the professional employee probably should be treated differently from the ordinary worker. Whether the INSTITUTE should do this by a group insurance procedure or merely call it to the attention of the members is being given further study.

—Dr. G. L. Royer, *Chairman*
V. C. Bidlack
Dr. L. A. Hall
S. B. McFarlane
R. L. Moore
Dr. V. N. Morris
H. F. Wakefield

AIC Activities

Western Chapter

Chairman, Thomas J. Rollins
Chairman-elect, Dr. Frederick G. Sawyer
Vice President, Alfred J. Webber
Treasurer, Thomas J. Kehoe
Co-Secretaries: Gil Sinclair, 1160 Hugo Reid Drive, Arcadia, Calif. Donald K. Peterson, 4328 W. 58th Place, Los Angeles 43, Calif.
National Council Representative, Morris Katzman

Solar Energy

The first meeting of the season will be held by the Western Chapter on Oct. 13th, at Rudi's Italian Inn, Los Angeles, Calif. The speaker is Merritt L. Kastens, assistant director of Stanford Research Institute, who will talk on "A Chemist Looks at Solar Energy." He will review the various mechanisms by which solar energy can be utilized, with personal estimates of the distance that must be covered in each field before practical economic applications are possible A second section will deal with the problems of solar energy utilization which require direct attention from the chemist, as well as some possible applications of solar energy which would be of direct use to the chemist. The final section will deal with a forecast of the nature of the forthcoming solar congress in Arizona and an attempt to predict what might be the direct and indirect results of this meeting.

Chicago Chapter

Chairman, Clifford A. Hampel
Vice Chairman, Richard G. Maquire
Secretary, Dr. Harold M. Coleman, Armour Research Foundation, 10 W. 35th St., Chicago 16, Ill.
Treasurer, Dr. C. A. Johnson
National Council Representative, Dr. Johan A. Bjorksten

Why Research Associates?

Writing in the *Newsletter* of the Chicago Chapter, E. Field answers this question as follows:

"Industry has become increasingly aware of the need to provide an adequate channel of advancement for the scientist who wants to remain in research. Too many of us have seen a gifted, highly

trained research man promoted out of the laboratory to an administrative job where his special skills atrophy while he struggles with personnel problems and paper work.

"A solution which has become increasingly popular in the last ten years is the creation of a position frequently called 'Research Associate' or 'Senior Scientist'. These are non-administrative and usually include a consulting role plus a large degree of freedom and scope in research program. To provide a sufficiently attractive alternate to the conventional line of promotion, these positions may be well paid and carry sufficient prestige and autonomy that they will not be subject to the usual pressures to work on short range trouble shooting. Furthermore, the position need not be self-limiting but can lead to various types of high level coordinating or advisory posts.

"What does such an arrangement offer to the employer? First, the greater flexibility in paths of promotion should lead to a better selection of the right man for the right job. This in turn should improve morale and stimulate research effort. Second, the existence of such a line of advancement helps attract capable graduates into industrial research. Third, it is possible to bring experienced men into the organization when desirable, without upsetting normal lines of succession. Finally, it provides greater flexibility within an organization to meet special problems which may arise.

"Best of all, it makes it possible for qualified research men to reach professional levels hitherto rare in industrial laboratories."

New York Chapter

Chairman, Richard L. Moore
Chairman-elect, Dr. Murray Berdick
Treasurer, Robert R. Dean
Secretary, George Foy, Fine Chemicals Div., Shulton, Inc., Route 46, Clifton, N. J.
National Council Representative, John Kotrady

Gold Key Award Dinner

The New York Chapter will award Gold Keys to its former chairmen at a dinner on October 20th at The Chemists' Club, New York, N. Y. The program includes cocktails sponsored by Evans Research and Development Corporation; "A Ten Minute Trip Around the Last Twenty-eight Years," by Richard L. Moore; introduction of the Gold Key recipients by Dr. Lincoln T. Work, and an address, "A Bird's Eye View of Our Chemical Profession" by Dr. Otto Eisenschiml, chairman, Scientific Oil Compounding Corporation, Chicago, Ill.

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The New Yorkemist

The New York Chapter resumed publication of its newsletter under the title of "The New Yorkemist." This lively paper gives program announcements, requests ideas for meetings, gives details on the Accident and Health Insurance Program of the Chapter, and lists suggestions sent in by members.

New Jersey Chapter

Chairman, Dr. Cecil L. Brown
Treasurer, Dr. William R. Sullivan
Secretary, Dr. Albert B. Scott, Merck & Co., Rahway, N. J.
National Council Representative, Dr. H. W. Mackinney

Professional Problems

The New Jersey Chapter, in cooperation with the Rutgers Chapter of the American Chemical Society Student Affiliates, will meet in the Physics Lecture Room, Rutgers University, New Brunswick, N. J., on December first at 8:00 p.m. The program will be a panel discussion on "Professional Problems Associated with One's Career in Chemistry."

The moderator is Prof. Mason W. Gross, provost of Rutgers University. Speakers are: Prof. Hubert N. Alyea, Princeton University, and Dr. Mario Scalera, associate research director, Re-

search Division, American Cyanamid Co.

Representing academic and industrial points of view, the speakers will discuss such important factors relative to a professional career in chemistry as love of one's work, financial gain, working environment, intellectual stimulation, usefulness, prestige, security and individuality. There will be opportunity for questions and discussion from the audience.

All scientists, in addition to members of the sponsoring organizations, are invited to attend and take part in the discussion. An especial invitation is extended to students and to recent graduates newly embarked on their professional careers in any field of science.

Will You Come

Oct. 11, 1955. Luncheon, Washington Chapter. O'Donnell's Sea Grill, Washington, D. C. Speaker: Paul H. Robbins, Executive Director, National Society of Professional Engineers, "Problems of the Professional Employee."

Oct. 12, 1955. National Council and Board of Directors of The American Institute of Chemists. The Chemists' Club, New York, N. Y. Dinner.

Oct. 13, 1955. Western Chapter. Dinner. Rudi's Italian Inn, Los Angeles, Calif. Speaker: Merritt L. Kastens, Associate Director, Stanford Research Institute, "A Chemist Looks at Solar Energy."

Oct. 20, 1955. Meeting New York Chapter. The Chemists' Club, New York, N. Y. Cocktails sponsored by Evans Research & Development Corp. Dinner. Presentation of awards to past chairmen of the Chapter. Speaker: Dr. Otto Eisenschiml, "A Bird's-Eye View of the Chemical Profession."

Oct. 26, 1955. New Jersey Chapter. Joint meeting with A.C.S. and A.I.Ch.E. Auditorium, Clinton School, Clinton Ave., Plainfield, N. J. 8 p.m. Panel Discussion, "Training Future Scientists in our Schools." Moderator: Dr. Warren M. Davis. Speakers, Harold Hainfeld, Dr. P. A. van der Meulen, and Dr. Donald B. Keyes.

Nov. 11, 1955. Chicago Chapter. Engineers Club. Cocktails 6 p.m. Dinner 6:30. Meeting 7:30. Speaker: Dr. Burleigh B. Gardner, "Management, Morale and the Professional Man." Reservations: H. F. Schwarz, Co. 4-8800, Ext. 475.

Dec. 1, 1955. New Jersey Chapter, in cooperation with Rutgers Chapter of American Chemical Society Affiliates. Physics Lecture Room, Rutgers Univ., New Brunswick, N. J. Panel Discussion, "Professional Problems Associated with One's Career in Chemistry." Moderator: Prof. Mason W. Gross, Provost of Rutgers University. Speakers: Prof. Hubert N. Alyea, Princeton University; Dr. Mario Scalera, Associate Research Director, Research Div., American Cyanamid Co. Meeting at 8 p.m. Interested persons welcome.

Dec. 14, 1955. National Council and Board of Directors of The American Institute of Chemists. The Chemists' Club, 52 East 41st St., New York, N. Y. Board meeting at 5:30 p.m. Council meets at 6:00 p.m. Dinner.

Jan. 12, 1956. New York Chapter. Presentation of Honorary AIC Membership to Dr. H. B. McClure, F.A.I.C., president of Carbide & Carbon Chemicals Co. Hotel Commodore, New York, N. Y. For information, S. Stigman, Foster D. Snell, Inc., 29 W. 15th St., New York 11, N. Y.

Jan. 13, 1956. Chicago Chapter. Speaker, Ethelyne Cortelyou, "Homme ou Femme Chimiste. Peut on les distinguer professionellement?" For information: Dr. Harold M. Coleman, Armour Research Foundation, 10 W. 35th St., Chicago 16, Ill.

Feb. 10, 1956. New York Chapter. Joint meeting with American Chemical Society. Carbide & Carbon Cafeteria, 30 East 42nd St., New York, N. Y.

April 26, 1956. New York Chapter. Theme: "So You're Going to be a Chemist." Student Medal Awards.

May 3, 1956. New Jersey Chapter. Presentation of Honor Scroll. Newark, N. J.

June 7, 1956. New York Chapter. Annual Dinner Meeting. Hotel Commodore, New York, N. Y. Honor Scroll Presentation.

May 9-11, 1956. AIC Annual Meeting. Hotel Statler, Boston, Mass. The New England Chapter will be our host.

Opportunities

Doris Eager, M.A.I.C.

AIC members who are seeking positions may place notices in this column without charge.

Positions Available

Section Head: Position of responsibility for formulating technical objectives, determining project priority, assigning programs. Ph.D. in Ch.E., Food Tech., Phys. Chem. or Bio-Phys. M.S. with 5 yrs. exp., or B.S. with 7 yrs. exp. Salary $8,000.

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For Your Library

Name Reactions in Organic Chemistry

By Alexander R. Surrey. Academic Press, Inc. 1954. 192 pp. $4.00.

This slender volume in which are assembled the reactions which bear the names of chemists who discovered them is fascinating reading for the chemist interested in the history of his art. Before each reaction, the author has included a short biographical sketch of the discoverer, and these carry us all the way back to the beginning of organic chemistry. Fifty of the names are German;

ten French; five Russian; five American; four English; five Swiss; two Scotch; two Austrian; two Italian; one a Dane and one a Canadian. Most of these men were born in the middle of the nineteenth century, were professors, and lived to a ripe old age.

Every chemist will think of others he would have included. The writer made his selection "on the basis of general interest, recurrence in the literature, and the contributions of the 'name chemist' to the historical development of organic chemistry." (Then how could he have left out Reppe?) But whether we agree with the choice of names, we know Mr. Surrey has done a real service to chemists in assembling this much information about the pioneers in our field.

—Dr. Frederick A. Hessel, F.A.I.C.

The Proteins

Vol. II, Part B. H. Neurath and K. Bailey, Editors. Academic Press, Inc. 1954. 755 *pp.* 6" x 9", $16.50.

This volume is divided into six chapters. The first deals with the proteins of blood plasma and lymph. It includes many physiological functions as well as methods for plasma fractionation. The second chapter will be of special interest to immuno-chemists. Here are discussed immune reactions: antigens, antibodies, antibody-antigen combination, and complement and complement fixation. The third chapter reviews the structure of silk fibroin, the keratin group, the collagen group, and elastin, and *in vivo* and *in vitro* changes affecting these proteins under different conditions. The fourth chapter covers the structure of muscle proteins. The fifth chapter discusses proteolytic enzymes: methods, physiochemical properties, chemical composition and stability. The final chapter of this series contains peptide and protein synthesis: synthesis of and interaction between peptide bonds, incorporation of isotopic amino acids, and topics concerning protein turnover.

There is an author index, a well-prepared subject index, and numerous instructive illustrations. This work is well edited. Recent advances in proteins and proteolytic enzymes have been exceedingly well presented.

—Dr. Henry Tauber, F.A.I.C.

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Soil

By G. V. Jacks. Philosophical Library, Inc. 1955. 221 *pp.* $5.00.

This volume, prepared by the director of the Commonwealth Bureau of Soil Science, Rothamsted, England, is primarily intended for the practical farmer, but it contains much information of value to the agricultural chemist, and while the last chapter is exclusively devoted to British soils, several of the illustrations are of conditions in our own country.

Beginning with the simple definition of soil, "what plants grow in," Mr. Jacks discusses: The architecture of soil; its chemistry; water; population (fauna and flora). He then discusses humus and what it does, the necessity and methods of soil cultivation; then forest, plant-made and man-made soils; soil classification and erosion.

A bibliography and index complete this useful little book written for the layman by a scientifically trained agronomist.

—Dr. Frederick A. Hessel, F.A.I.C

Technique of Organic Chemistry

Vol. I, Part 3. Edited by Arnold Weissberger. Interscience Publishers, Inc. 440 *pp.* 6¼" x 9¼". $8.50.

This volume is a continuation of the description of physical methods of organic analyses and measurements by the newer techniques, electron microscopy, microspectroscopy, birefringence, dialectric, radiofrequency spectroscopy, neutron diffraction, viscometry and scintillation counting. A good cumulative index is included.

—Dr. John A. Steffens, F.A.I.C

KENNETH E. BELL

Editor's Note: Mr. Bell received the Honor Scroll of the New England Chapter, as reported in the May 1955 issue of THE CHEMIST. At that time, we promised our readers a photograph of him when it could be obtained. After his return from Europe, he sent in this one.

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Chemical Books Abroad

Rudolph Seiden, F.A.I.C.

Gebrueder Borntraeger, Berlin-Nikolassee: *Physik und Chemie des Zellkernes*, by P. F. Milovidov; in 2 volumes: 1949-54, 1143 pp.; DM 175.—A most thorough, critical compilation of all the information which comprises our current knowledge of the cell nucleus, especially its physics and chemistry. The structure of the nucleus and that of the chromosomes have also been considered. The nucleal reac-

tions are treated in the main chapter (pp. 419-529) of the first volume. However the latter's literature references (pp. 530-662) are found at the beginning of *Vol. 2* which also brings 176 pages of supplements gathered from the world literature (until 1951) as well as indexes of authors, of plant and animal species, and of all the cytological subject matter of this meritorious monograph, which is a monument to the perseverance of its ambitious and learned author.

Springer Verlag, Berlin W 35: *Kolorimetrie, Photometrie und Spektrometrie,* by G. Kortuem; 3rd ed., 458 pp. (186 Ill.), DM 36.—With emphasis on evaluation of the advantages and disadvantages of the various methods, and of the best working conditions for obtaining the most exact results in the simplest manner, the author describes all the modern measuring methods based on the phenomena of absorption, emission, fluorescence, dispersion, turbidity, and reflection. Thus, visual light-electrical, thermoelectric, and photographic methods are discussed thoroughly to the delight of anyone interested in the practical possibilities of colorimetry, photometry, and spectrometry in the laboratory.

Wissenschaftliche Verlagsgesellschaft m. b.H., Stuttgart 1: *Gehes Codex, Nachtragsband I,* by G. Otto; 1954, 287 pp.; DM 27.—In the September 1954 issue of THE CHEMIST, Gehes Codex (8th ed.) was reviewed. Now the first supplement to this most complete listing of pharmaceutical specialties — with information as to their composition, indication, and manufacture — has become available. It covers 3,300 specialties developed during 1954.

Ferdinand Enke Verlag, Stuttgart—W: *Chemie und Technik der Vitamine,* by H. Vogel and H. Knobloch; Vol. 2, Part I, 3rd ed., 182 pp.; DM 30.—This section concludes Part I of the second volume of this work; it deals chiefly with the water-soluble vitamins, *p*-aminobenzoic acid, and folic acid.

Verlag Chemie, Weinheim/Bergstr.: *Therapeutisch verwendbare Sulfonamide—and Sulfonverbindungen,* by F. Mietzsch and R. Behnisch; 2nd ed., 200 pp. (8 ill., 1 table); paperbound DM. 17.80—Most welcome is the thoroughness with which this review of the sulfonamides and sulfones has been documented—there are 1579 well-selected literature references and patents from all parts of the world. Chemical and physical properties and therapeutic actions of the systematically arranged chemotherapeutica are described. There are also chapters on history, theories of sulfa action, radioactive preparations, and economical importance of the sulfonamides.

Hippokrates Verlag, Stuttgart 1: *Die Antibiotika und ihre Schattenseiten,* by J. Zinzius; 1954, 96 pp., paperbound DM 6.80—A physician gathered hundreds of published case reports concerning the side-effects of penicillin, streptomycin, aureomycin, terramycin, and chloromycetin. He emphasizes again and again that the use of antibiotics is more dangerous than generally assumed; they are able to cause worse conditions than those for which they were originally employed by the doctor or self-medicating patient.

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"Knitted Electrothermal Heating Tape." Information. Arthur S. LaPine & Co., 6001 So. Knox Ave., Chicago 29, Ill.

"Fisher Chemical Index, Bulk Chemicals Supplement." Catalog. Fisher Scientific, 717 Forbes St., Pittsburgh 19, Pa.

"DEL Protective Coatings." Information. David E. Long Corp., 220 E. 42nd St., New York 17, N. Y.

"Columbia Research News Annual." 30 pp. Scientific developments. *Columbia Research News,* Columbia University Engineering Center, 4 West 43rd St., New York 36, N. Y.

"Catalog of Pocket Size Technical Data Books." Lefax Publishers, Philadelphia 7, Pa.

"VirTis UltraBac Filter." Apparatus for both ultrafiltration and bacteriological filtration. Information. E. Machlett & Son, 220 E. 23rd St., New York 10, N. Y.

"Rotameter Catalog." Bulletin No. 115. Brooks Rotameter Co., Lansdale, Penn.

"Freeze Dry Apparatus." Information. The VirTis Co., Inc., 160 Ashburton Ave., Yonkers, N. Y.

"Antioxidant 425, for natural & synthetic rubbers." Intermediate & Rubber Chemicals Dept., American Cyanamid Co., Bound Brook, N. J.

"Indicating Temperature Control." 6-pp. Bulletin 42. United Electric Controls Co., 85 School St., Watertown, Mass.

"Direct Reading Flame Photometer." Bulletin 396. Beckman Div., Beckman Instruments, Inc., Fullerton 1, Calif.

"Technological Use of Hydrogen Peroxide Vapor." Bulletin No. 62. BECCO Chemical Div., Food Machinery & Chemical Corp., Buffalo 7, N. Y.

"Polyethylene Centrifuge Tubes." Information. Sample. E. Machlett & Son, 220 East 23rd St., New York 10, N. Y.

"Archer 250, ADM-100 Oil, ADM-150 Oil, and SL-200, film-forming lacquer plasticizers." 40 pp. technical bulletin No. 76-A. Archer-Daniels-Midlan Co., 700 Investors Bldg., Minneapolis 2, Minn.

"Standard Stainless Steel Vapor Condensers." Information. Doyle & Roth Mfg. Co., Inc., 136-50 24th St., Brooklyn 32, N. Y.

"Standards for a Strong America." 100 pp. Proceedings of Fifth National Conference on Standards." $3.00. American Standards Ass'n., 70 E. 45th St., New York 17, N. Y.

"Purine Available in Commercial Quantities." Information. The Francis Earle Laboratories, Inc., 1057 Lower South St., Peekskill, N. Y.

"Soap & Synthetic Detergent Buying Guide." Industrial Dept., Colgate-Palmolive Co., Jersey City 2, N. J.

Honored: Dr. John E. McKeen, Hon. AIC, president of Chas. Pfizer & Co., Inc., who was presented with the Legion of Honor by the government of France, in Paris, June 9th, in the course of ceremonies in inaugurating Pfizer's newly-built French plant. The distinction was conferred on Dr. McKeen as a token of his company's achievements in the field of medical chemistry and in appreciation of cooperation with the French chemical industry.

Meeting: Society for Applied Spectroscopy: Nov. 8, 1955, 6:00 p.m., Hotel New Yorker, New York, N. Y. Speaker: Dr. R. L. Mitchell, Macauley Institute for Soils Research, Aberdeen, Scotland, "Emission Spectroscopy in Agriculture."

Retired: John F. Broeker, F.A.I.C., sales promotion manager of white pigments, E. I. du Pont de Nemours & Co., Wilmington, Del., on July first, after thirty-five years with the company. He lives at 802 Greenwood Road, Westover Hills, Wilmington, Del.

On TV: Dr. Alexander Silverman, Hon. AIC, professor of chemistry, emeritus, University of Pittsburgh, October 4th, Station WQED, demonstrating "Glass in the Service of Man." This opens the series "Pitt in Action" which the University of Pittsburgh will sponsor during 1955-56.

Honored: Dr. Raymond E. Kirk, F.A.I.C., by his colleagues and friends at a dinner at the Hotel Granada in Brooklyn, N. Y. in June. Dr. Kirk is retiring as head of the department of chemistry at Polytechnic Institute of Brooklyn, which he has headed since 1931, but will continue as dean of the Graduate School and professor of inorganic chemistry.

Elected: Merritt L. Kastens, F.A.I.C., assistant director of Stanford Research Institute, Stanford, Calif., to the board of directors of the Division of Chemical Marketing and Economics of the American Chemical Society. He is vice chairman of the World Symposium on Applied Solar Energy, to be held Oct. 21-Nov. 5, in Tucson and Phoenix, Arizona.

Solar Engineering Exhibit: To be held Oct. 29-Nov. 13, at the World Symposium on Applied Solar Energy, in Phoenix, Arizona. Sixty-five displays of equipment at Phoenix Civic Center will show various methods of converting the sun's energy to useful purposes.

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Medalist: Joseph G. Davidson, vice president of Union Carbide and Carbon Corp., New York, N. Y., who will receive the Chemical Industry Medal for 1955, "for conspicuous services to applied chemistry." Presentation will be made at a dinner of the American Section, Society of Chemical Industry, at the Waldorf-Astoria Hotel, New York, N. Y., Oct. 28, 1955.

New Position: For Dr. Carl H. Krieger, F.A.I.C., who is now director of basic research for Campbell Soup Company, Camden 1, N. J. He was formerly with the Wisconsin Alumni Research Foundation, Madison, Wis.

New Divisions: To be created by Johns-Manville Corp., 22 E. 40th St., New York 16, N. Y.: Industrial Insulations Division, Packings and Friction Materials Division, and Pipe Division, each to be headed by a general manager and staff.

Symposium: On "How to Buy and Sell Consulting Services," at the annual meeting of the Association of Consulting Chemists & Chemical Engineers, Inc., Oct. 25th, Belmont Plaza Hotel, New York, N. Y. Guest Speaker: S. F. Coneybear, F.A.I.C., director of research, Colgate-Palmolive Co. Moderator: Richard L. Moore, F.A.I.C., director of Public Relations, Foster D. Snell, Inc.

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